



## Lesson Plan: Rocks and Minerals

**Grade Level:** 4

**Subject:** Earth Science

**Duration:** 45–60

**NGSS 4-ESS1-1:** Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.

### Learning Objectives

By the end of this lesson, students will be able to:

- **Identify** the three main types of rocks: igneous, sedimentary, and metamorphic
- **Describe** the physical properties used to identify minerals, including color, luster, hardness, and streak



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### Materials Needed: (all links are included in this PDF)

- Printed copies of the Study Guide (<https://newpathworksheets.com/api/guide/study-guide-science-grade-4-rocks-and-minerals.pdf>)
- Activity Lesson: The Rock Cycle (<https://newpathworksheets.com/api/activity-lesson/activity-lesson-science-grade-4-rocks-and-minerals-the-rock-cycle-4.pdf>)
- Assessment Worksheet (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-rocks-and-minerals-0.pdf>)
- Practice Worksheet 1 (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-rocks-and-minerals-1.pdf>)



- Vocabulary Worksheet 1 (<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-rocks-and-minerals-1.pdf>)

## Lesson Procedure

### Step 1: Introduction (5 minutes)

- Hook students by asking: "If you dig up a rock in your backyard, how can you tell how it was made millions of years ago?"
- Introduce key terms using the Vocabulary Worksheet. (<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-rocks-and-minerals-1.pdf>)

### Step 2: Direct Instruction (10 minutes)

- Use the Study Guide to define rocks and minerals, highlighting the difference between the



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- Have students label the arrows in the cycle to show processes like melting, cooling, and compression.

### Step 5: Assessment (5 minutes)

- Administer the Assessment Worksheet to evaluate understanding of rock classifications and mineral properties. (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-rocks-and-minerals-0.pdf>)
- Review answers briefly to address any lingering misconceptions.





- Vocabulary Set 3 (<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-rocks-and-minerals-3.pdf>)
- Vocabulary Set 4 (<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-rocks-and-minerals-4.pdf>)



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## ROCKS AND MINERALS

### What is in a Rock?

Rocks are made up of many tiny pieces of **minerals**.

Even if you smash a rock into a hundred pieces, ALL those would still be all the same mineral. Breaking it into pieces would not change the rock's makeup.

### What are Minerals?

**Minerals** are natural, nonliving crystals. They come in many sizes, shapes, and colors which is how scientists tell them apart.



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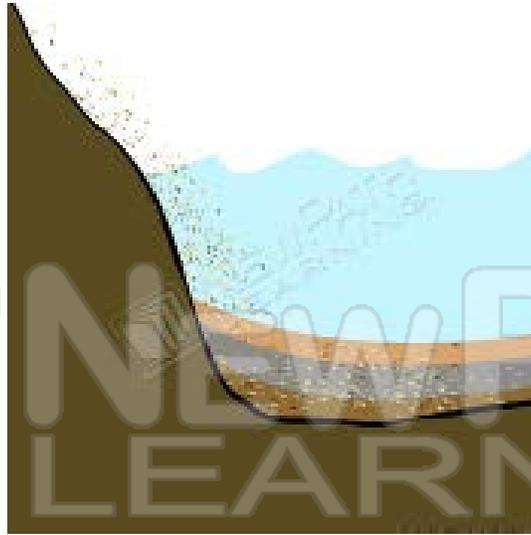
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There are several types of rocks, and each is formed in a different way.

### Sedimentary Rocks

**How do sedimentary rocks form?**

**Erosion** is the process of bits of rocks, sand, soil, and dead matter being moved by the wind, water, and gravity. All the eroded materials that eventually **settle** on land or at the bottom of a body of water are known as **sediment**. As layers of sediment pile up, the top layers of sediment press the bottom layers together. The weight and pressure from the top layers cause the sediment on the bottom layers to harden, **forming sedimentary rock**.



## Igneous Rocks

What are igneous rocks and how do they form?



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The weight of rocks pressing down on the other rocks causes the **heat and pressure** below the Earth's surface.

**Metamorphic rocks** can form from sedimentary, igneous, and other metamorphic rocks.

**Lesson Checkpoint:**  
*What are three types of rocks?*

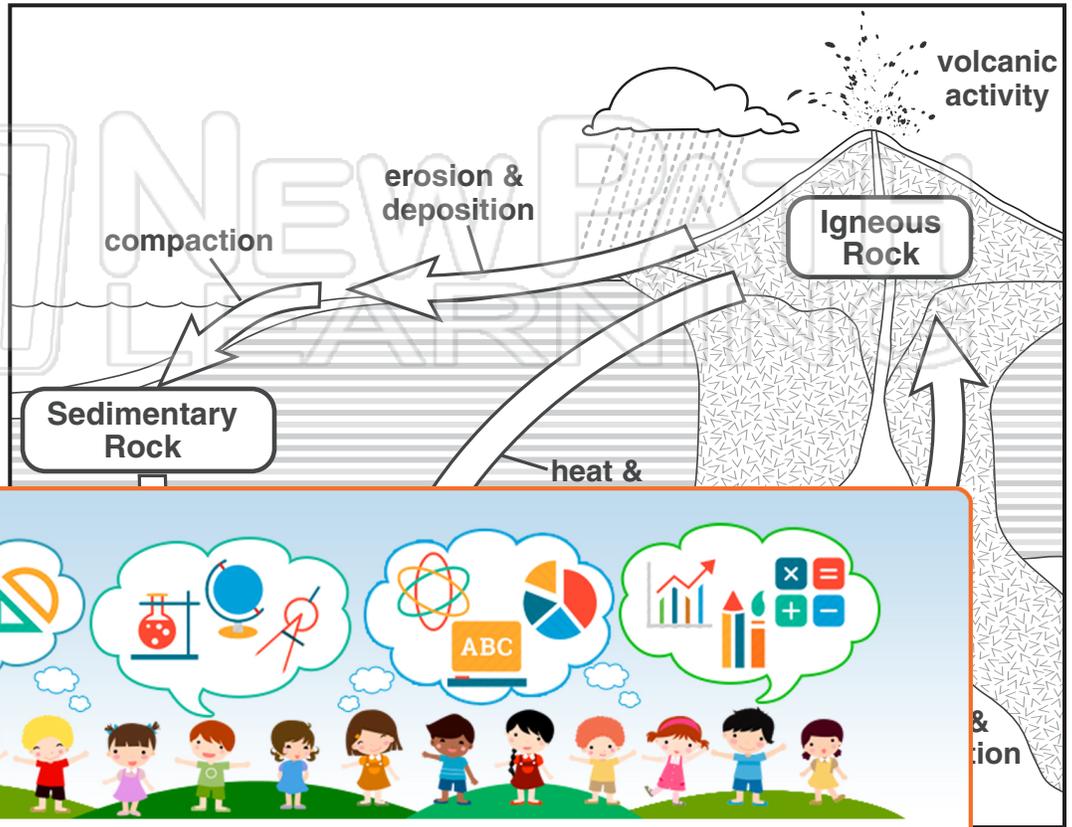




Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

**Rocks** are made up of many tiny pieces of minerals. **Minerals** are natural, nonliving crystals that make up rocks.

The **rock cycle** is the **recycling** of old rocks into new rocks. It is caused by heat, pressure, chemical reactions, weathering and erosion. It can take millions of years for rocks to move through this cycle.



**Erosion** is the process of rock and soil being broken down by wind and gravity. Erosion can even move rocks as **sediment**.



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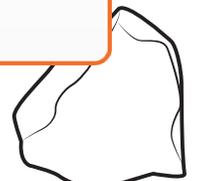
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**Igneous rocks** are found beneath the Earth's surface where magma reaches Earth's surface during a volcanic eruption as **lava**. Once on the Earth's surface, lava cools quickly forming igneous rocks. Magma may also cool and crystallize underground.

The weight of rocks pressing down on other rocks causes **heat and pressure** below the Earth's surface forming **metamorphic rocks**. Metamorphic rocks can form from sedimentary, igneous, and other metamorphic rocks.



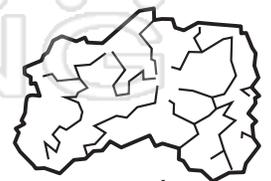
pumice



obsidian



gneiss



quartz



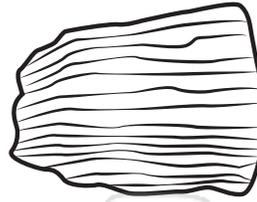
# The Rock Cycle

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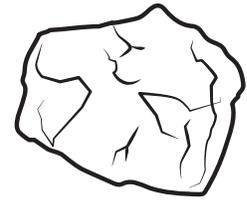
Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

What are rocks? \_\_\_\_\_

\_\_\_\_\_



sandstone



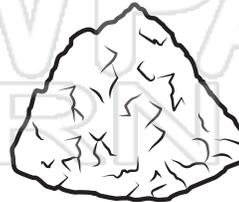
limestone

Sedimentary rocks are \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



halite

Draw & label a rock

Met



rock

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Igneous rocks are \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

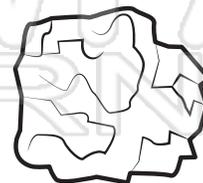
\_\_\_\_\_



pumice



obsidian



granite

Draw & label a rock



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

What is the Rock Cycle? \_\_\_\_\_

\_\_\_\_\_

## Complete the Rock Cycle



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Metamorphic Rock

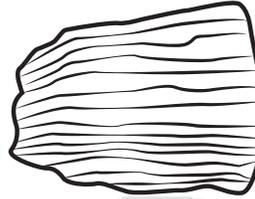


magma

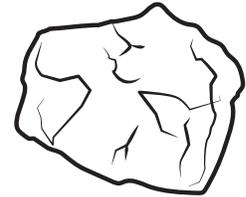


## Answer Key

What are rocks? Made from  
minerals above and under ground.

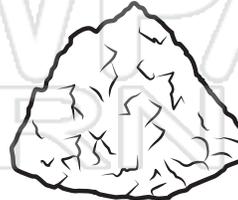


sandstone



limestone

Sedimentary rocks are \_\_\_\_\_  
formed by layers of eroded  
materials compressed together.



halite

Draw & label a rock

Meta  
ne  
pre  
the



## PREVIEW

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Igneous rocks are \_\_\_\_\_

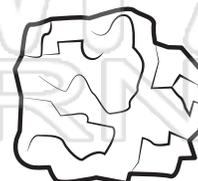
rocks made from lava from  
volcanoes. They are different  
based on temperature and where  
they were formed.



pumice



obsidian



granite

Draw & label a rock

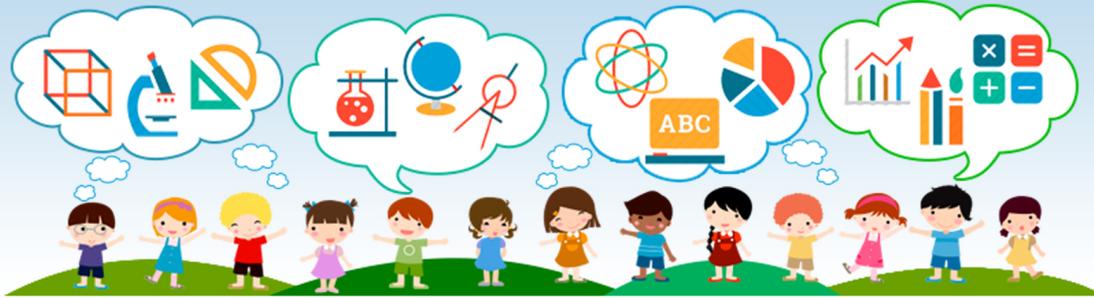


## Answer Key

What is the Rock Cycle? \_\_\_\_\_

The rock cycle is the recycling of old rocks into new rocks. It's caused by heat, pressure, weathering and erosion.

### Complete the Rock Cycle



## PREVIEW

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Metamorphic  
Rock

melting

magma



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1

**Rocks** are made up of **many tiny pieces** of \_\_\_\_\_.

- A wood
- B minerals
- C metal
- D tin



2

If you hit a large rock with a hammer and break it into **hundreds of pieces**, the pieces would \_\_\_\_\_.

- A still be made of the same minerals
- B include some new and some old minerals
- C form new minerals
- D become different rocks

3

**Minerals** are \_\_\_\_\_.

- A living pieces of rock
- B small metal pieces
- C natural, nonliving crystals that



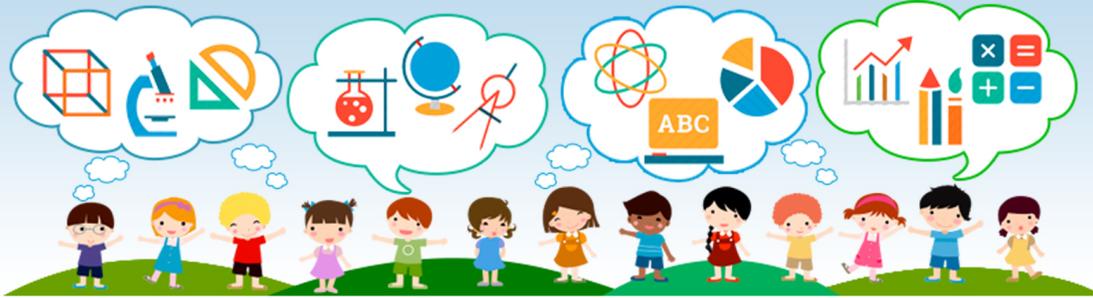
4

**Minerals** come in **many** sizes, shapes, and colors which \_\_\_\_\_.

- A help scientists tell them apart
- B make them all look exactly alike



5



## PREVIEW

7

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9

**Streak color** is a **physical** property of minerals, which refers to the color streak a mineral leaves when \_\_\_\_\_.

- A held
- B scratched against a surface
- C put in water
- D put in the sun



10

In the process of \_\_\_\_\_, bits of rocks, sand, soil, and dead matter are **moved** by the **wind, water, and gravity**.

- A erosion
- B precipitation
- C sedimentation
- D evaporation





Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1 **Rocks** are made up of **many tiny pieces** of \_\_\_\_\_.

- A wood
- B minerals
- C metal
- D tin



(B)

2 If you hit a large rock with a hammer and break it into **hundreds of pieces**, the pieces would \_\_\_\_\_.

- A still be made of the same minerals
- B include some new and some old minerals
- C form new minerals
- D become different rocks

(A)

3 **Minerals** are \_\_\_\_\_.

- A living pieces of rock
- B small metal pieces
- C natural, nonliving crystals that



(C)

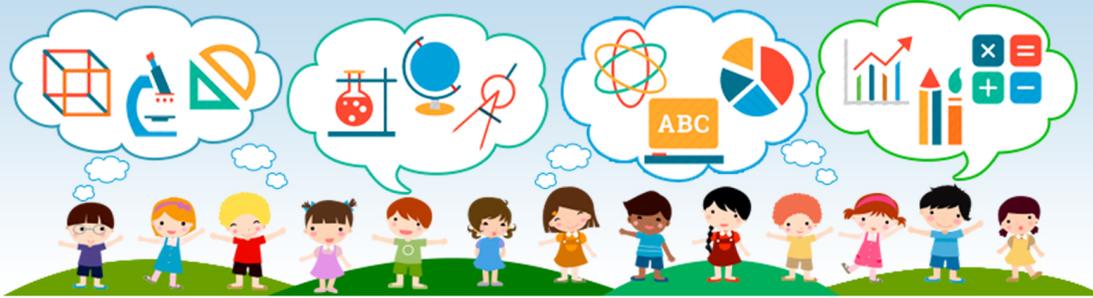
4 **Minerals** come in **many** sizes, shapes, and colors which \_\_\_\_\_.

- A help scientists tell them apart
- B make them all look exactly alike



(A)

5



(A)

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(D)

9 **Streak color** is a **physical** property of minerals, which refers to the color streak a mineral leaves when \_\_\_\_\_.

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- D put in the sun



(B)

10 In the process of \_\_\_\_\_, bits of rocks, sand, soil, and dead matter are **moved** by the **wind, water, and gravity**.

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(A)

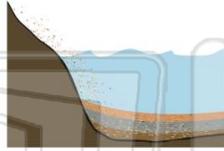


Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1

All the eroded materials that eventually settles on land or at the bottom of a body of water are known as \_\_\_\_\_.

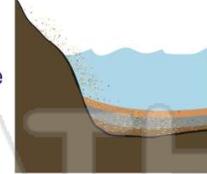
- A magma
- B minerals
- C sediment
- D crystals



2

Where do layers and layers of sediment often pile up on top of each other?

- A at the bottom of a body of water
- B in the atmosphere
- C on mountain top
- D in faults



3

The weight and pressure of many layers of sediment forms sedimentary rock. Since they form in layers, sedimentary rocks \_\_\_\_\_.

- A never form near water
- B are always light



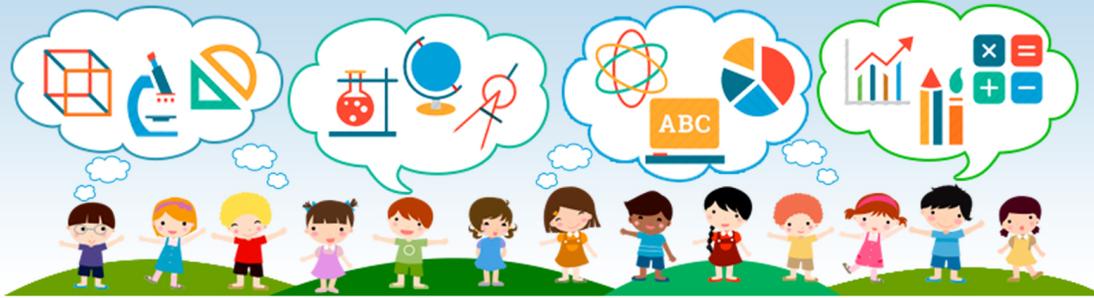
4

Limestone is a sedimentary rock made up of hard skeletons and shells. Which of these statements supports the sentence above?

- A Limestone is formed from water.
- B Limestone comes from ancient plants.



5



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- C melted rock found on top of earth's surface
- D melted rock found beneath earth's surface



- C below
- D under



9

When magma comes out of a volcano and onto the earth's surface, magma is then called \_\_\_\_\_.

- A lava
- B magma
- C sediment
- D molten rock



10

Once on the earth's surface, lava will cool quickly forming igneous rocks. Why don't these igneous rocks form crystals?

- A because the lava is above the surface
- B because they cool too slowly
- C because they cool too quickly
- D because lava cannot form crystals



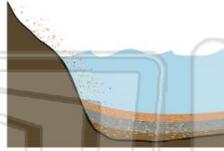


Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

1

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- A magma
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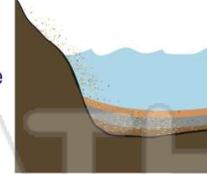


C

2

Where do layers and layers of **sediment** often **pile up** on top of each other?

- A at the bottom of a body of water
- B in the atmosphere
- C on mountain top
- D in faults



A

3

The **weight and pressure** of many layers of sediment **forms sedimentary rock**. Since they form in **layers**, sedimentary rocks \_\_\_\_\_.

- A never form near water
- B are always light



C

4

**Limestone** is a sedimentary rock made up of **hard skeletons and shells**. Which of these statements supports the sentence above?

- A Limestone is formed from water.
- B Limestone comes from ancient plants.



C

5



B

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B

- C melted rock found on top of earth's surface
- D melted rock found beneath earth's surface



- C below
- D under



9

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- A lava
- B magma
- C sediment
- D molten rock



A

10

Once on the earth's surface, lava will cool quickly forming igneous rocks. Why **don't** these igneous rocks form **crystals**?

- A because the lava is above the surface
- B because they cool too slowly
- C because they cool too quickly
- D because lava cannot form crystals



C



Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

### Match each of the following terms to its definition:

Felsic

Gemstone

Chemical sedimentary rock

Crystal

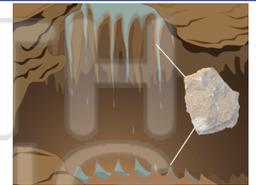
Contact metamorphism

Clastic sedimentary rock

Fracture

Cleavage

1. - sedimentary rock formed by the chemical precipitation of mineral material from ocean water (such as gypsum, limestone and halite)



2. fragments of other rock

- sedimentary rock composed of



3. descri



4. heat f

5. arrang

6. igneou

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7. along irregular surfaces

- the way a mineral looks when it breaks



8. worn in jewelry; valued for its rarity and beauty

- a mineral that is often polished and





Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

### Match each of the following terms to its definition:

Felsic

Gemstone

Chemical sedimentary rock

Crystal

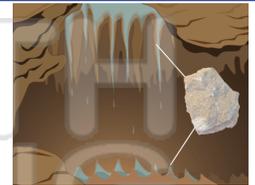
Contact metamorphism

Clastic sedimentary rock

Fracture

Cleavage

**1. chemical sedimentary rock** - sedimentary rock formed by the chemical precipitation of mineral material from ocean water (such as gypsum, limestone and halite)



**2. clastic sedimentary rock** - sedimentary rock composed of fragments of other rock



3. cleavage

4. contact metamorphism

5. crystal

6. felsic

**PREVIEW**

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**7. fracture** - the way a mineral looks when it breaks along irregular surfaces



**8. gemstone** - a mineral that is often polished and worn in jewelry; valued for its rarity and beauty

